

ABRAMS URBAN QUICK REFERENCE GUIDE

Rules of Engagement (ROE)

Threat

Fratricide Avoidance

Due to the rapid movement of friendly infantry

Fratricide Avoidance (continued)

Tank Capabilities

The tank's main gun and coax machine gun can depress to -10 degrees and elevate to +20 degrees. This creates considerable dead space for tank crews at close ranges, which are typical during urban operations. Engaging targets at rooftop level requires the crew to be at least 30 meters away to be able to elevate to rooftop level. For a target located on the 6th or 7th floor for example, crews must be a minimum of 60 meters away from the target. Crews may back up or use rubble, vehicles or higher elevation to allow them to elevate and engage supporting infantry, TCs they should seek these positions to support

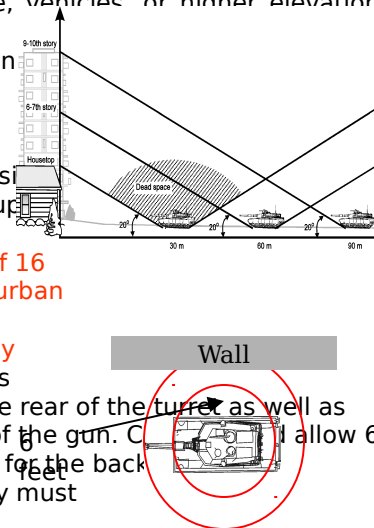
A diagram showing a cross-section of a multi-story building labeled 'House No. 1'. The building has several floors, with labels for '9-10th story' and '6-7th story'. A tank is positioned at the bottom left, looking upwards towards the building. Two diagonal lines represent the tank's field of view, starting from its gun position and extending upwards. The area between these two lines, particularly near the base of the building, is shaded grey and labeled 'Dead space'. The tank's gun is labeled '-10°' and the coaxial machine gun is labeled '+20°'. The diagram illustrates how the tank's limited elevation range creates areas where it cannot see or fire upon targets, especially those on upper floors of buildings.

With an average street width of 16 meters in urban areas, traversing the main gun may be difficult. Crews

must consider the rear of the turret as well as the muzzle end of the gun. Crews must allow 6 feet of clearance for the back of the turret; they must account for additional length if additional gear or equipment has been stowed on the stowage racks.

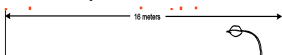
Survivability

To date, the Abrams tank affords the tank crew the best protection on the battlefield; however, it was not designed to fight in urban terrain. The tank crew can greatly enhance its survivability with simple techniques and



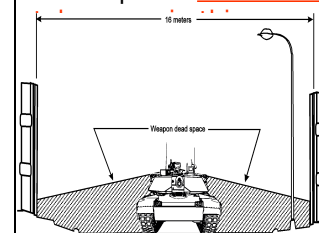
-Dead Space

Conducting operations with closed hatches creates considerable dead space where the enemy may approach and emplace explosives that may damage or destroy the Abrams tank. Most streets are 16 meters wide in urban areas. This short width creates dead space where the crew cannot observe through their vision blocks or engage with crew-served weapons. Utilizing tank sections and infantry support can greatly mitigate this by having constant observation of these areas. Tank crews must not become overdependent on infantry support to cover this dead space. Brief infantry soldiers that if they



The diagram shows a top-down view of a tank's position in a street. The tank is represented by a rectangle with a circle in the center, indicating the hatch. A horizontal line with arrows at both ends is labeled '16 meters', representing the street width. A red dot is placed at the far left end of this line, representing a potential enemy position in the dead space. A red arrow points from the text 'they may be killed when backs up.' to the red dot.

they may be killed when backs up.



- they may be killed when backs up.

WARNING
Dismounted soldiers may be injured or killed while in the tank's dead space.

-Load Plans

Tank crews should remove all gear that may catch on fire. When this is not possible, the crews must ensure the gear is stowed in the bustle rack below the line of sight so it does not impair vision from the TC's vision blocks while operating closed hatch. Drivers should have extra vision blocks in the driver's compartment to replace any that become damaged. Additional water and rations should be stored in the turret.

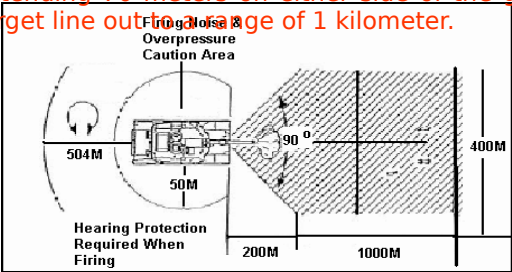
-Tank Modifications

Heat shields may be constructed from sheet metal and bolted to exhaust grates to deflect the tank's heat and exhaust downward, enabling infantry to walk behind the tank. The shield may be mounted to deflect the exhaust upward; however, the exhaust will interfere with the thermal sight when engaging to the rear.

WARNING
The tank's 900-degree exhaust will burn the skin if the exhaust grate or deflector is damaged or removed.

Survivability (Continued)
-Battle Positions
Vehicles, rubble from buildings, and walls can be used for hasty battle positions during urban operations. Anything that can be placed between the crew member and an RPG can afford cover. It can also be used to pull up onto to gain greater elevation for the main gun and coax machine gun. Chain link fences can provide protection from RPGs and ATGMs by causing them to detonate prematurely.

Ammunition
The preferred main gun rounds during urban operations are HEAT, MPAT (ground mode), and MPAT-OR (XM908). These all perform much better than sabot rounds against bunkers and buildings. HEAT ammunition will open a larger hole in reinforced concrete or masonry structures than MPAT or MPAT-OR (XM908). Both MPAT and MPAT-OR, however, offer greater incapacitation capability inside the structure. HEAT ammunition arms approximately 60 feet from the gun muzzle. It loses most of its effectiveness against urban targets at ranges of less than 60 feet. MPAT and MPAT-OR rounds arm approximately 100 feet from the muzzle end of the gun. Because of the shape and metal components of the projectiles, however, this ammunition remains effective at ranges of less than 100 feet. Sabot petals, including those on MPAT and MPAT-OR, endanger accompanying dismounted soldiers. They create a hazard area extending 70 meters on either side of the gun-target line out to a range of 1 kilometer.



WARNING
Dismounted soldiers may be injured or killed from the overpressure and discarding sabot pedals from the 120mm cannon, falling glass, and debris created by the overpressure and rounds impacting on buildings.

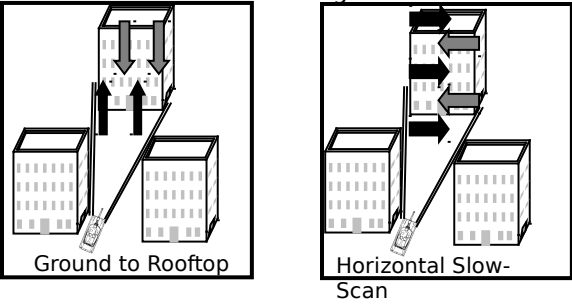
Building Characteristics
The crew's ability to classify building and wall thickness will enable them to support the infantry wall-breaching efforts. This chart provides information needed to penetrate walls with main gun ammunition. In some cases, crews should fire one round of sabot to crack concrete and follow with HEAT or MPAT to shatter the wall and create a breach for infantry.

TYPE	BUILDING MATERIAL	HEIGHT (STORIES)	AVERAGE WALL THICKNES S (inches)
Mass	Stone	1 to 10	30
Mass	Brick	1 to 3	8 to 12
Mass	Brick	3 to 6	12 to 24
Mass	Concrete Block	1 to 5	8
Mass	Concrete Wall and Slab	1 to 10	8 to 15
Mass	Concrete "Tilt-ups"	1 to 3	7

Target Acquisition Framed
In urban operations, the crew's ability to detect targets will be affected by friendly and enemy smoke, fire, and dust from debris. The TIS reflects off glass and prevents crews from seeing through windows; therefore, crews should alternate the daylight and thermal sight while scanning. The use of hunter-killer teams is highly encouraged—infantry, scouts, or wingmen are the hunters and the tank is the killer.

Sectors of Responsibility (M1 and M1A1)
The TC's sector of responsibility is 360 degrees using his vision blocks and the ground-to-rooftop search and scan, paying close attention to rooftops and windows. The gunner's sector is forward from fender to fender, within the limits of the GPS in 3X magnification, using the horizontal slow-scan technique, and alternating the daylight and thermal sight. The driver's sector is forward, between the front fenders, paying close attention to alleys, obstructions, and possible mine locations.

Sectors of Responsibility (M1A2 SEP)
The TC's sector has the addition of the CITV in 3X using the ground-to-rooftop technique. The M1A2 gunner's sector is forward from fender to fender, within the limits of the GPS in 3X magnification, using horizontal slow-scan technique. The M1A2 SEP gunner will alternate the GPS 3X and the BIOC sight.



Target Engagement
Due to the short range of targets, the possible lateral spread of fleeting targets, and the speed required to engage moving targets, gunners may engage targets in 3X from the GPS. Due to the 3X framing box (no aim point), the Abrams thermal sight does not allow engaging targets. The fire control system cannot provide a ballistic solution for less than 200 meters for the main gun. A battlesight range of 300 meters for the main gun will enable crews to engage targets at 0 to 600 meters and provide faster engagement times.

Training
To prepare for urban operations, TCs and crews should practice the following procedures:

- Closed hatch operations.
- Scanning techniques.
- Crew drills—backing up and pivot steering while engaging targets.
- Reduced fire commands.
- Main gun and coax machine gun battlesight and degraded gunner techniques.

Comments for improving this publication on DA Form 2028 to Directorate of Training, Doctrine, and Combat Development, U.S. Cavalry and Armor Center, ATTN: ATZK-TDD-G, Fort Knox, KY 40121-5000. Additional information is available at (502) 624-5765.